

PSYCHOLOGY

(8th Edition)

David Myers

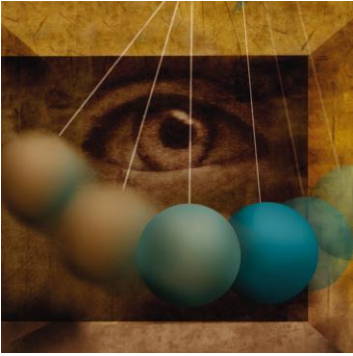
PowerPoint Slides

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Perception

Chapter 6

Perception

Selective Attention

Perceptual Illusions

Perceptual Organization

- Form Perception
- Motion Perception
- Perceptual Constancy

Perception

Perceptual Interpretation

- Sensory Deprivation and Restored Vision
- Perceptual Adaptation
- Perceptual Set
- Perception and Human Factor

Perception

Is there Extrasensory Perception?

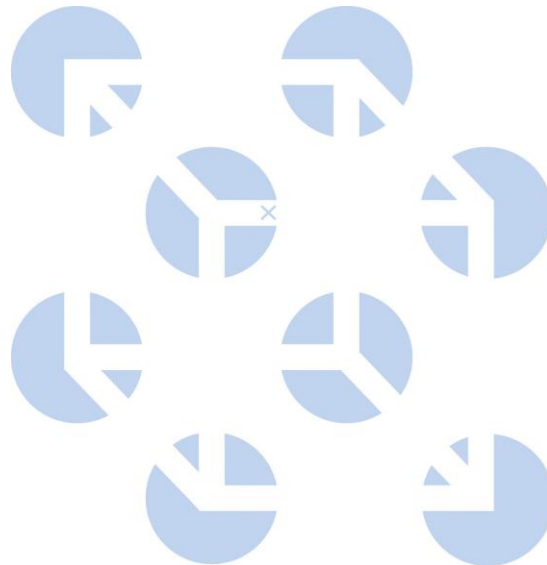
- Claims of ESP
- Premonitions or Pretensions
- Putting ESP to Experimental Test

Perception

The process of selecting, organizing, and interpreting sensory information, which enables us to recognize meaningful objects and events.

Selective Attention

Perceptions about objects change from moment to moment. We can perceive different forms of the Necker cube; however, we can only pay attention to one aspect of the object at a time.



Necker Cube

Inattentional Blindness

Inattentional blindness refers to the inability to see an object or a person in our midst. Simmons & Chabris (1999) showed that half of the observers failed to see the gorilla-suited assistant in a ball passing game.



Daniel Simons, University of Illinois

Change Blindness

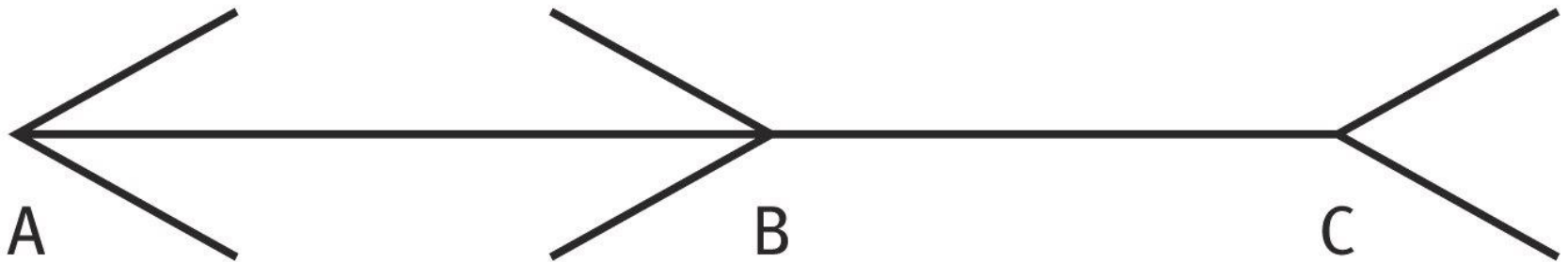
Change blindness is a form of inattentional blindness in which two-thirds of individuals giving directions failed to notice a change in the individual asking for directions.



© 1998 Psychonomic Society Inc. Image provided courtesy of Daniel J. Simmons.

Perceptual Illusions

Illusions provide good examples in understanding how perception is organized. Studying faulty perception is as important as studying other perceptual phenomena.



Line AB is longer than line BC.

Tall Arch

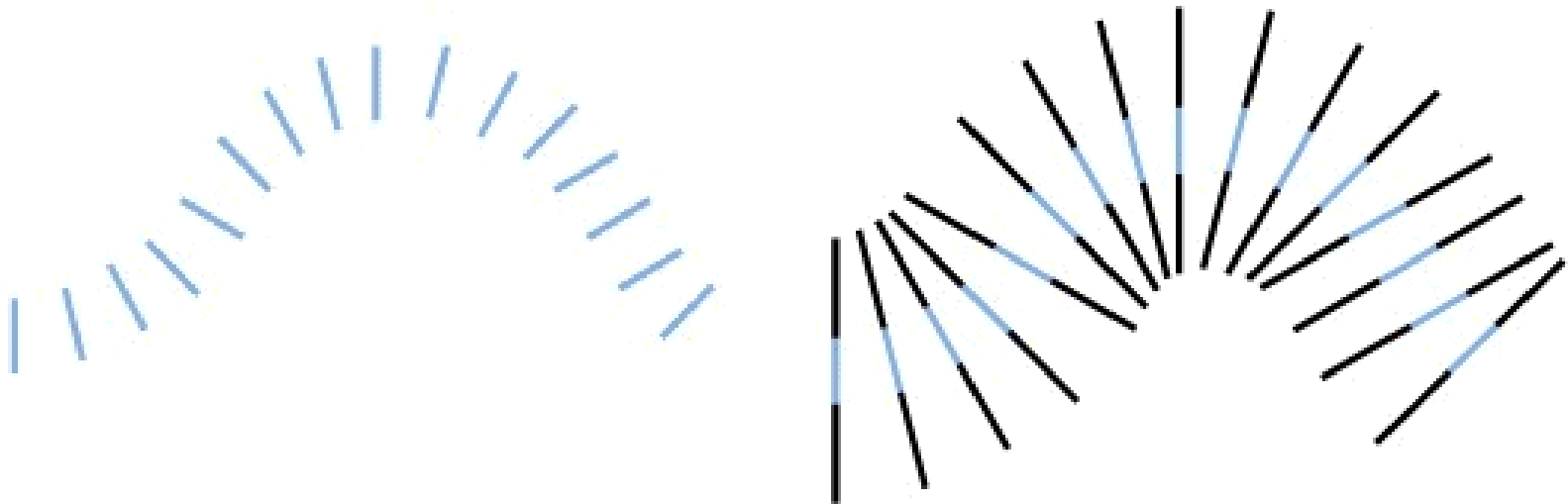
In this picture, the vertical dimension of the arch looks longer than the horizontal dimension.

However, both are equal.



Rick Friedman/Black Star

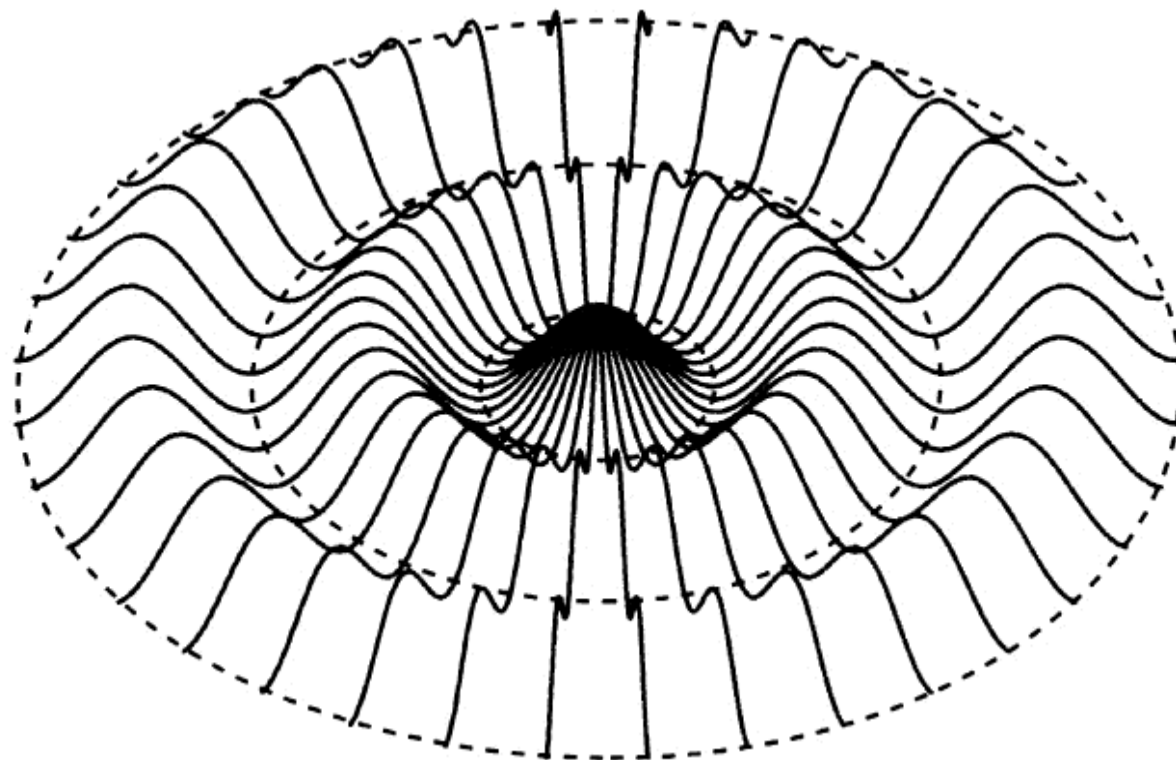
Illusion of a Worm



© 1981, by permission of Christoph Redies and
Lothar Spillmann and Pion Limited, London

The figure on the right gives the illusion of a blue hazy “worm” when it is nothing else but blue lines identical to the figure on the left.

3-D Illusion



Reprinted with kind permission of Elsevier Science-NL. Adapted from Hoffman, D. & Richards, W. Parts of recognition. *Cognition*, 63, 29-78

It takes a great deal of effort to perceive this figure in two dimensions.

Perceptual Organization

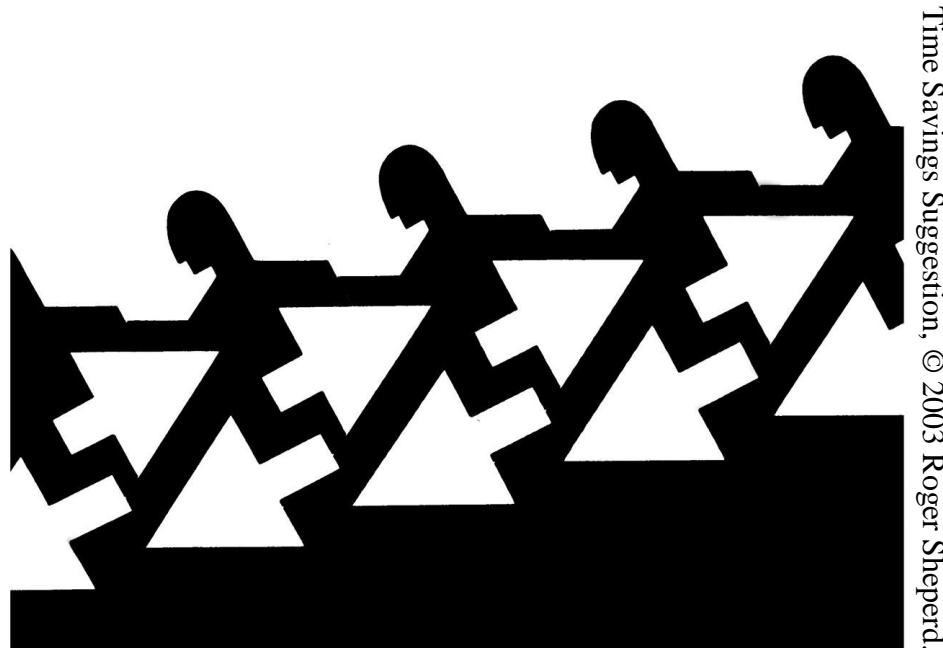
When vision competes with our other senses, vision usually wins – a phenomena called **visual capture**.

How do we form meaningful perceptions from sensory information?

We organize it. Gestalt psychologists showed that a figure formed a “whole” different than its surroundings.

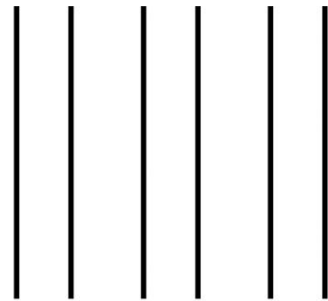
Form Perception

Organization of the visual field into objects (figures) that stand out from their surroundings (ground).

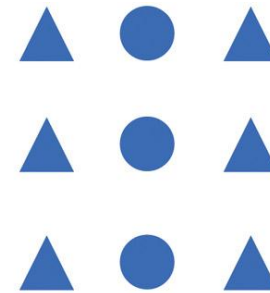


Grouping

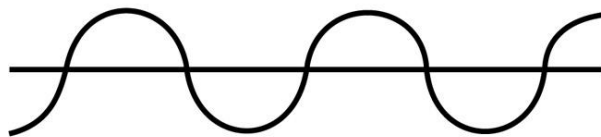
After distinguishing the figure from the ground, our perception needs to organize the figure into a meaningful form using grouping rules.



Proximity



Similarity



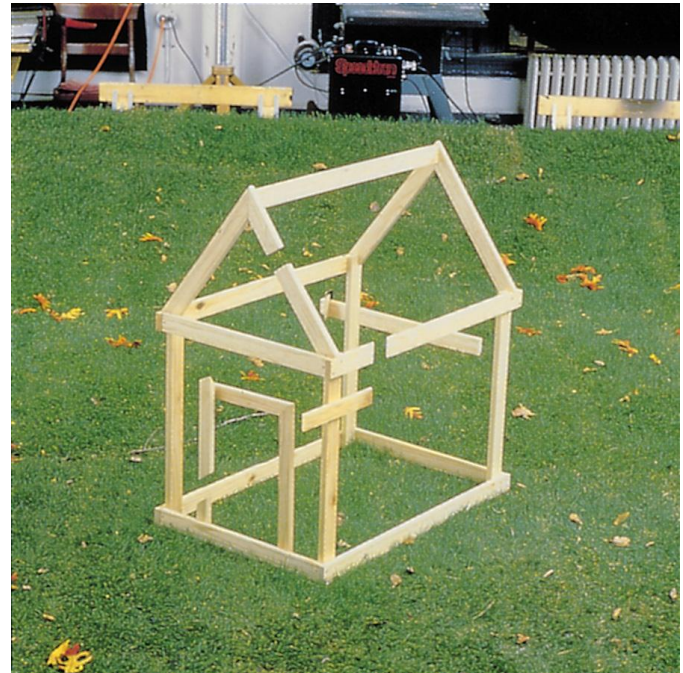
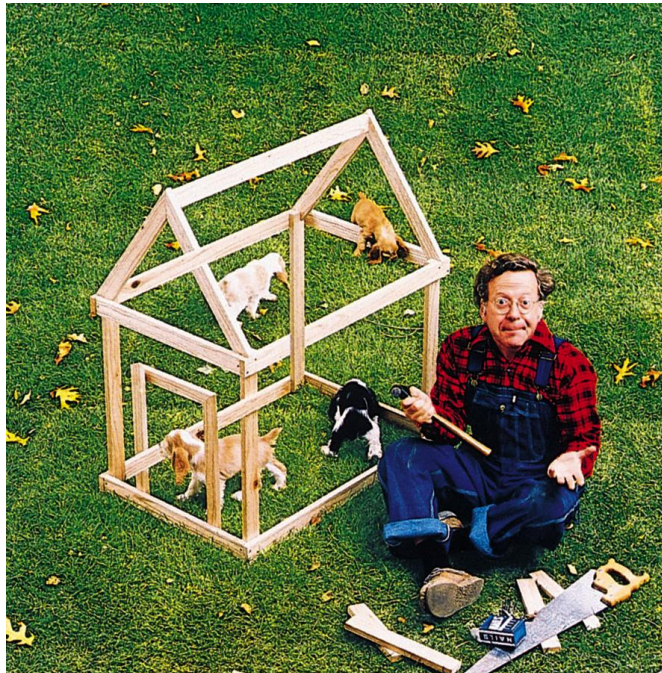
Continuity



Connectedness

Grouping & Reality

Although grouping principles usually help us construct reality, they may occasionally lead us astray.

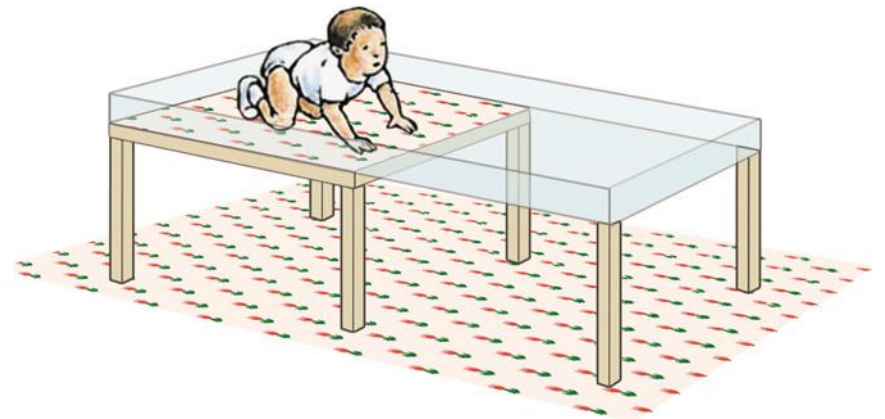


Both photos by Walter Wick. Reprinted from GAMES Magazine. © 1983 PCS Games Limited Partnership

Depth Perception

Depth perception enables us to judge distances. Gibson and Walk (1960) suggested that human infants (crawling age) have depth perception. Even newborn animals show depth perception.

Innervisions



Visual Cliff

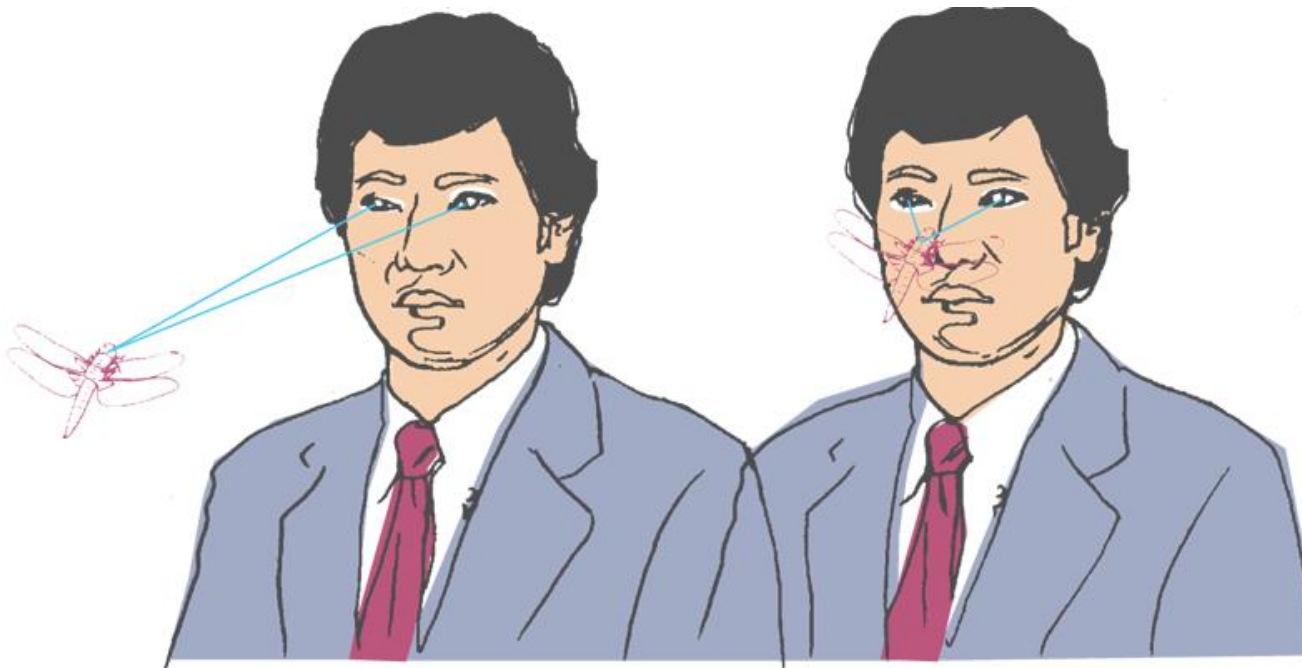
Binocular Cues

Retinal disparity: Images from the two eyes differ. Try looking at your two index fingers when pointing them towards each other half an inch apart and about 5 inches directly in front of your eyes. You will see a “finger sausage” as shown in the inset.



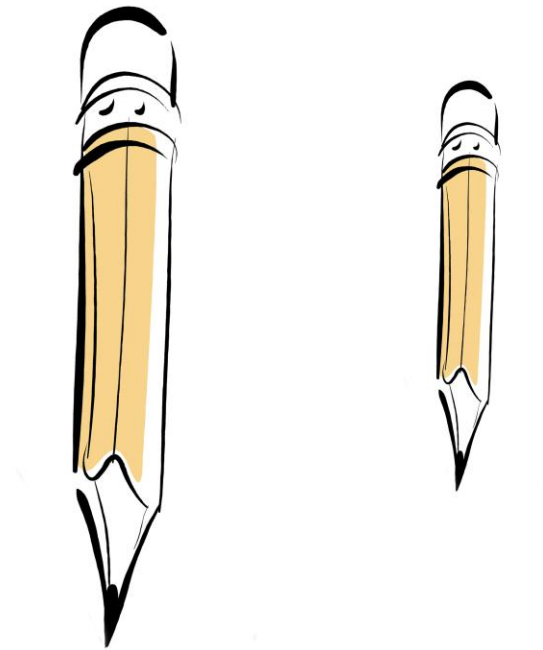
Binocular Cues

Convergence: Neuromuscular cues. When two eyes move inward (towards the nose) to see near objects and outward (away from the nose) to see faraway objects.



Monocular Cues

Relative Size: If two objects are similar in size, we perceive the one that casts a smaller retinal image to be farther away.



Monocular Cues

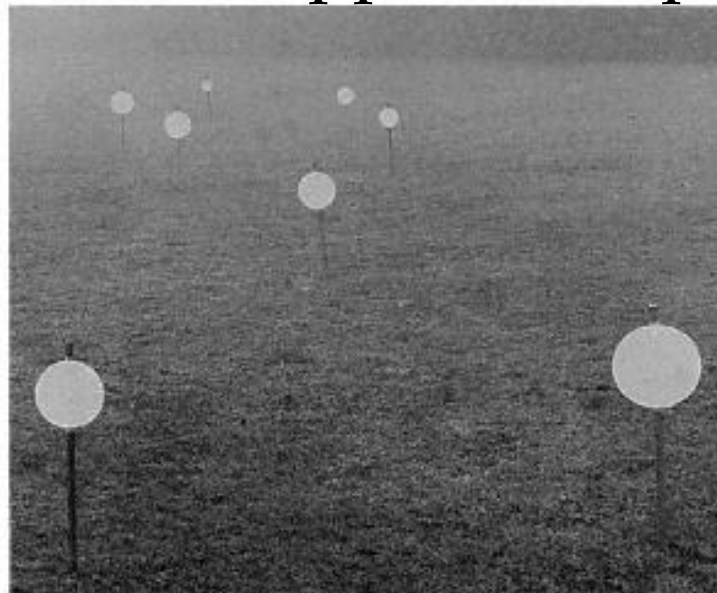
Interposition: Objects that occlude (block) other objects tend to be perceived as closer.



Rene Magritte, *The Blank Signature*, oil on canvas, National Gallery of Art, Washington. Collection of Mr. and Mrs. Paul Mellon. Photo by Richard Carafelli.

Monocular Cues

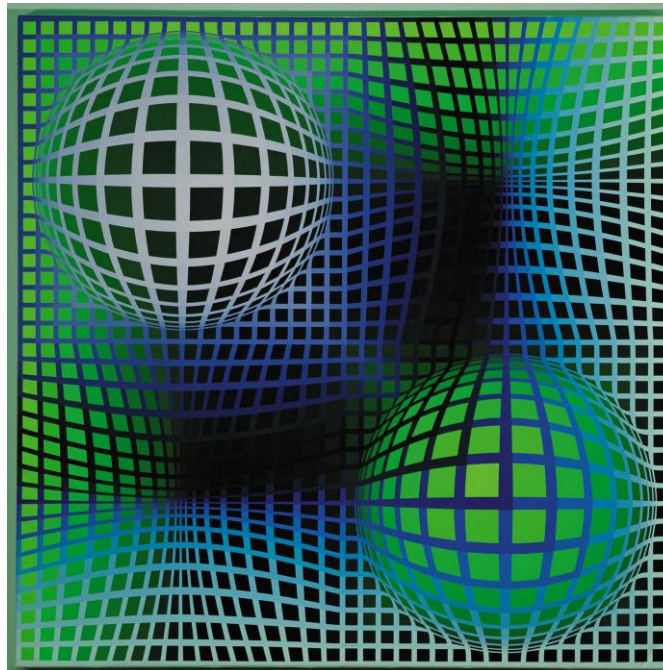
Relative Clarity: Because light from distant objects passes through more light than closer objects, we perceive hazy objects to be farther away than those objects that appear sharp and clear.



Morning Fog

Monocular Cues

Texture Gradient: Indistinct (fine) texture signals an increasing distance.



© Eric Lessing / Art Resource, NY

Monocular Cues

Relative Height: We perceive objects that are higher in our field of vision to be farther away than those that are lower.

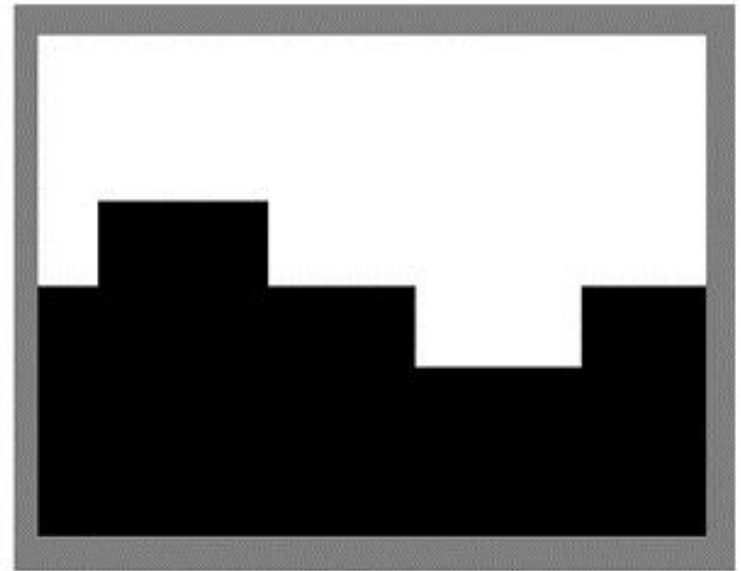
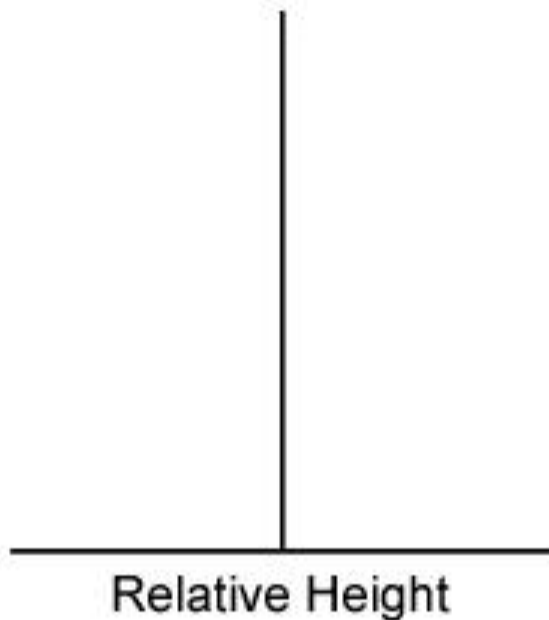


Image courtesy of Shaun P. Vecera, Ph. D.,
adapted from stimuli that appeared in Vecera et al., 2002

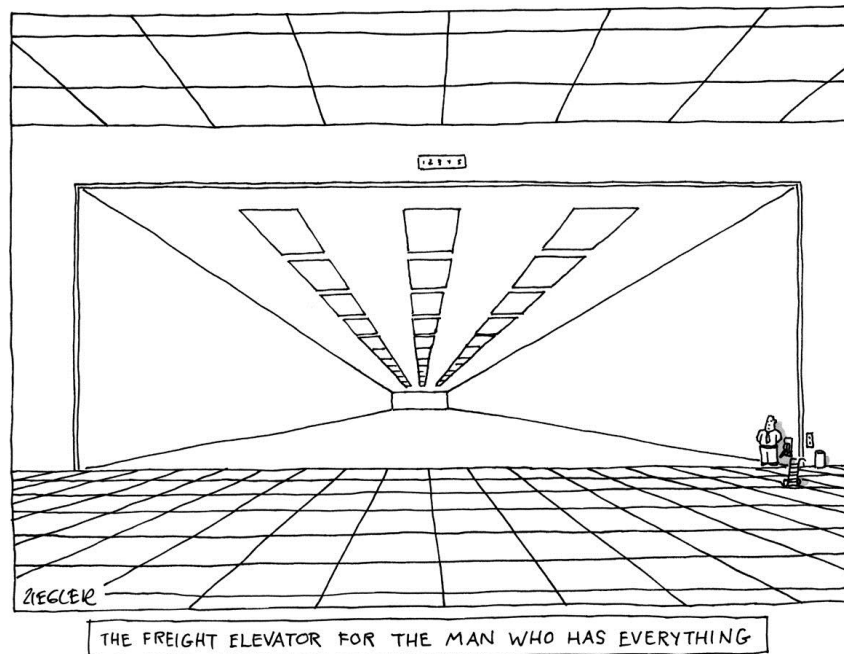
Monocular Cues

Relative motion: Objects closer to a fixation point move faster and in opposing direction to those objects that are farther away from a fixation point, moving slower and in the same direction.



Monocular Cues

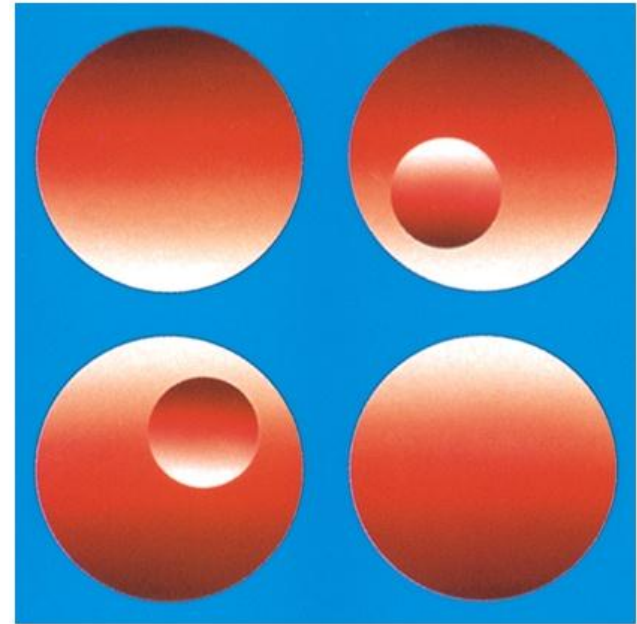
Linear Perspective: Parallel lines, such as railroad tracks, appear to converge in the distance. The more the lines converge, the greater their perceived distance.



© The New Yorker Collection, 2002, Jack Ziegler
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Monocular Cues

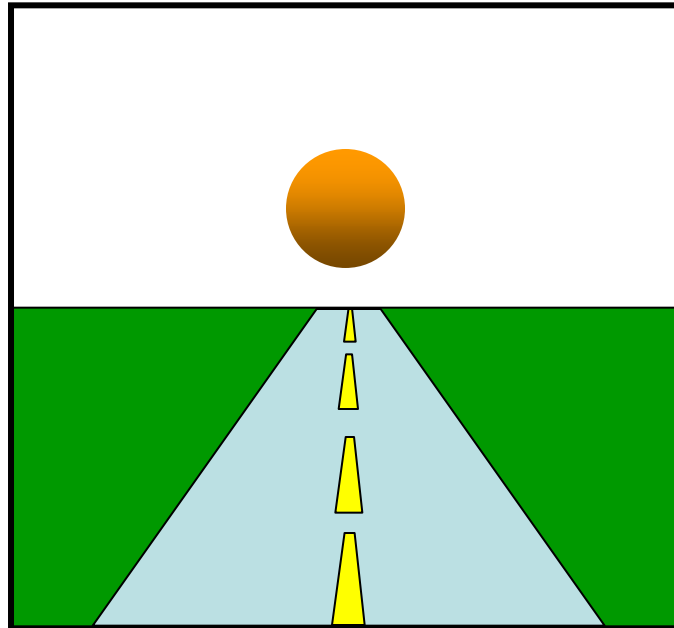
Light and Shadow: Nearby objects reflect more light into our eyes than more distant objects. Given two identical objects, the dimmer one appears to be farther away.



From "Perceiving Shape From Shading" by Vilayanur S. Ramachandran. © 1988 by Scientific American, Inc. All rights reserved.

Motion Perception

Motion Perception: Objects traveling towards us grow in size and those moving away shrink in size. The same is true when the observer moves to or from an object.



Apparent Motion

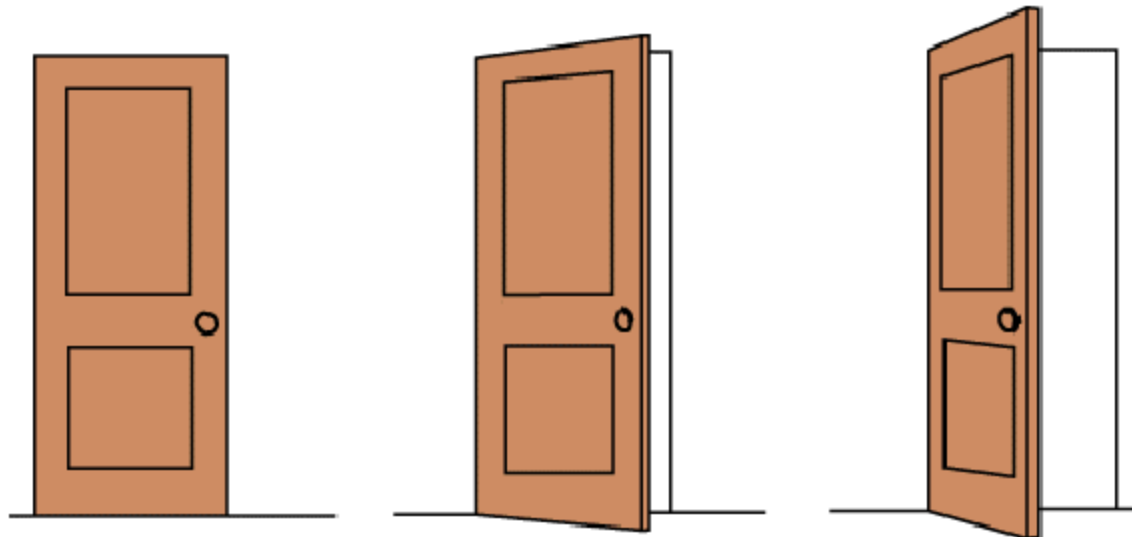
Phi Phenomenon: When lights flash at a certain speed they tend to present illusions of motion. Neon signs use this principle to create motion perception.



One light jumping from one point to another: Illusion of motion.

Perceptual Constancy

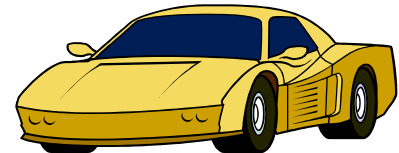
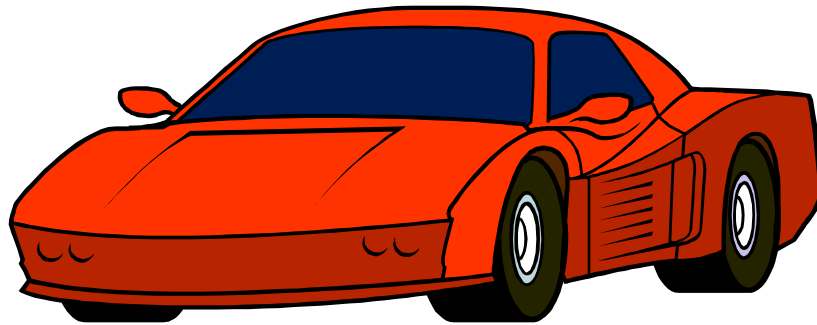
Perceiving objects as unchanging even as illumination and retinal images change. Perceptual constancies include constancies of shape and size.



Shape Constancy

Size Constancy

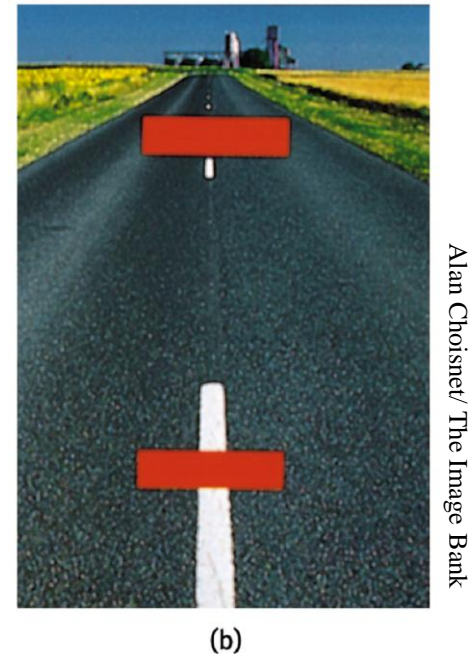
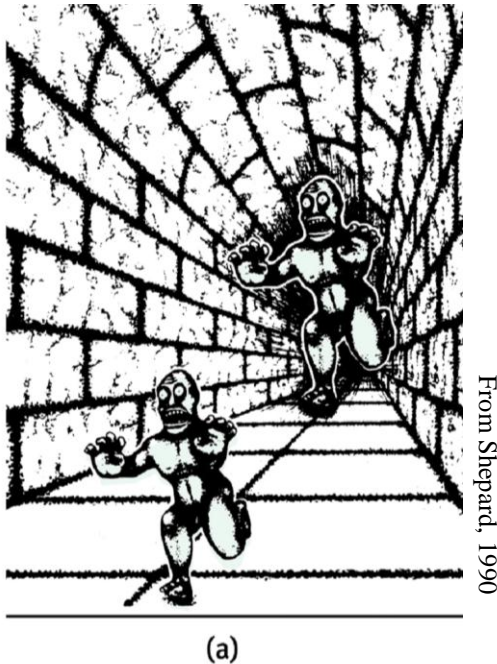
Stable size perception amid changing size of the stimuli.



Size Constancy

Size-Distance Relationship

The distant monster (below, left) and the top red bar (below, right) appear bigger because of distance cues.



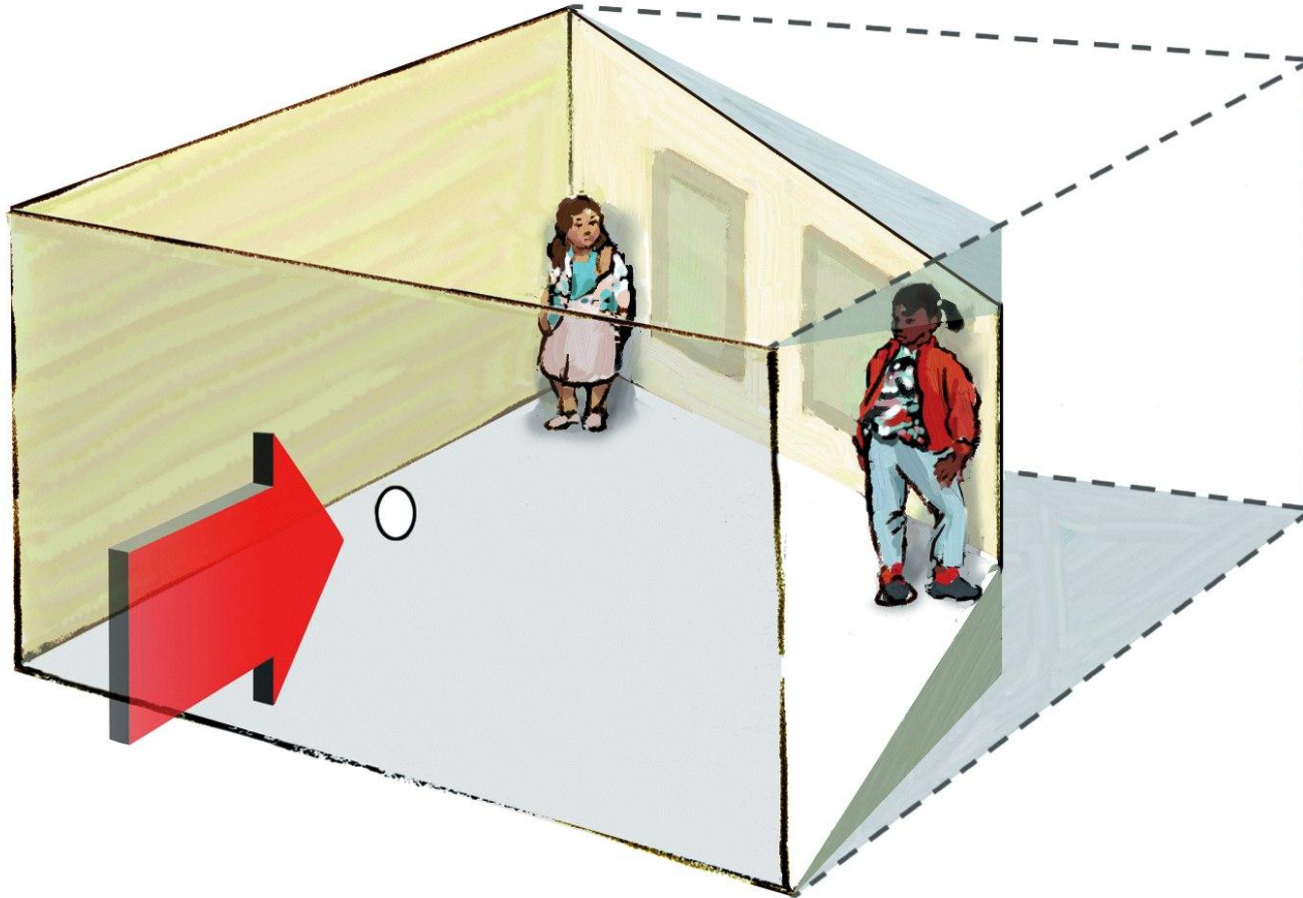
Size-Distance Relationship

Both girls in the room are of similar height. However, we perceive them to be of different heights as they stand in the two corners of the room.



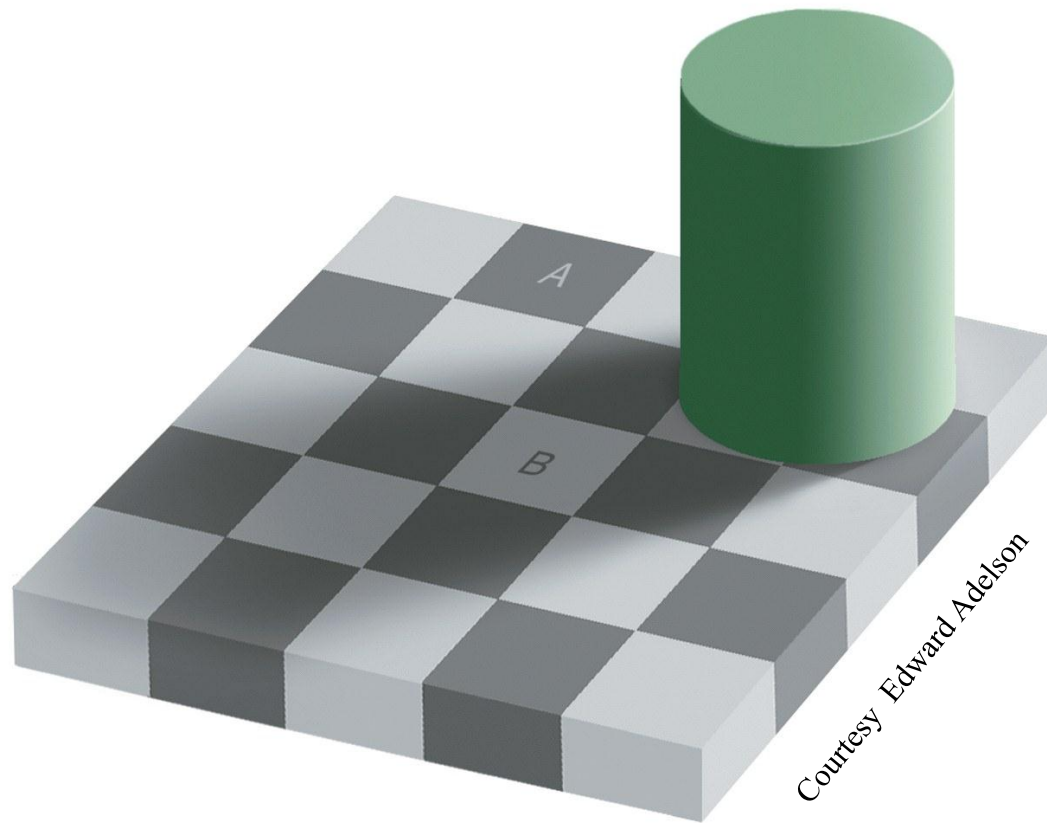
Both photos from S. Schwartzberg/ The Exploratorium

Ames Room



The Ames room is designed to demonstrate the size-distance illusion.

Lightness Constancy



The color and brightness of square A and B are the same.

Color Constancy

Perceiving familiar objects as having consistent color even when changing illumination filters the light reflected by the object.



Color Constancy

Perceptual Interpretation

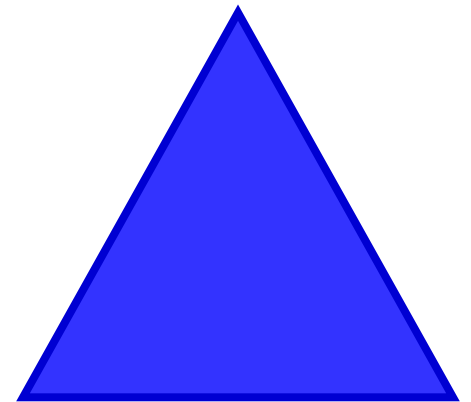
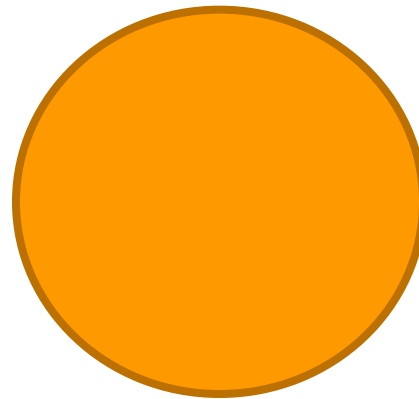
Immanuel Kant (1724-1804) maintained that knowledge comes from our inborn ways of organizing sensory experiences.

John Locke (1632-1704) argued that we learn to perceive the world through our experiences.

How important is experience in shaping our perceptual interpretation?

Restored Vision

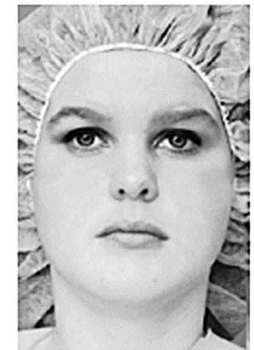
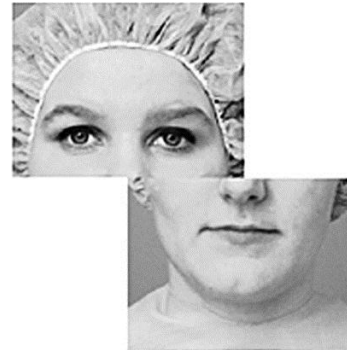
After cataract surgery, blind adults were able to regain sight. These individuals could differentiate figure and ground relationships, yet they had difficulty distinguishing a circle and a triangle (Von Senden, 1932).



Facial Recognition

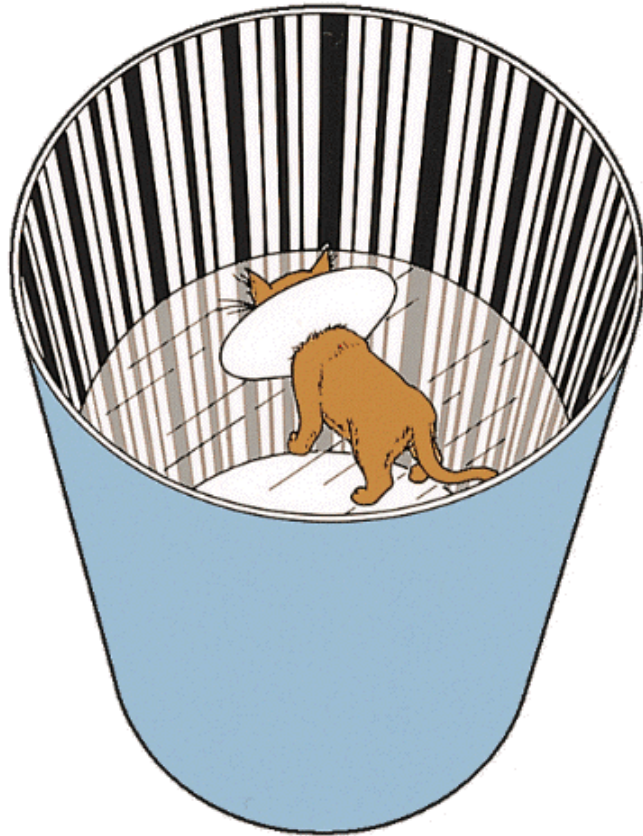
After blind adults regained sight, they were able to recognize distinct features, but were unable to recognize faces.

Normal observers also show difficulty in facial recognition when the lower half of the pictures are changed.



Courtesy of Richard LeGrand

Sensory Deprivation



Kittens raised
without exposure to
horizontal lines later
had difficulty
perceiving horizontal
bars.

Blakemore & Cooper (1970)

Perceptual Adaptation

Visual ability to adjust
to an artificially
displaced visual field,
e.g., prism glasses.



Courtesy of Hubert Dolezal

Perceptual Set

A mental predisposition to perceive one thing and not another. What you see in the center picture is influenced by flanking pictures.



From Shepard, 1990.

Perceptual Set

Other examples of perceptual set.



Frank Searle, photo Adams/ Corbis-Sygma

(a)



Dick Ruhl

(b)

- (a) Loch ness monster or a tree trunk;
- (b) Flying saucers or clouds?

Schemas

Schemas are concepts that organize and interpret unfamiliar information.

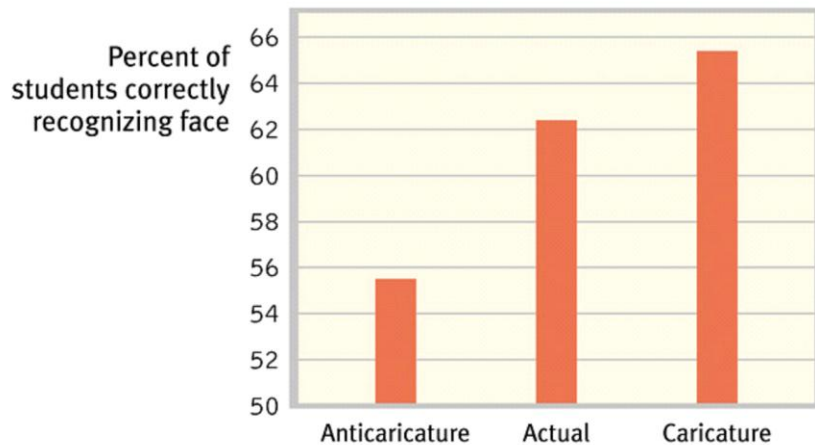


Courtesy of Anna Elizabeth Voskuil

Children's schemas represent reality as well as their abilities to represent what they see.

Features on a Face

Face schemas are accentuated by specific features on the face.



Anticaricature



Actual



Caricature

Students recognized a caricature of Arnold Schwarzenegger faster than his actual photo.

Eye & Mouth

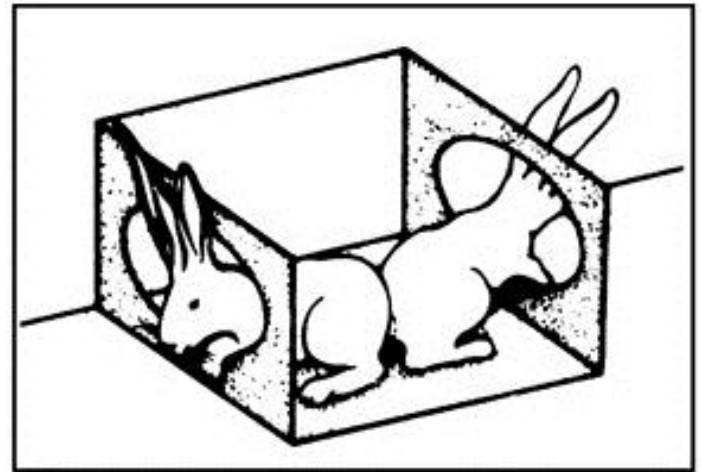
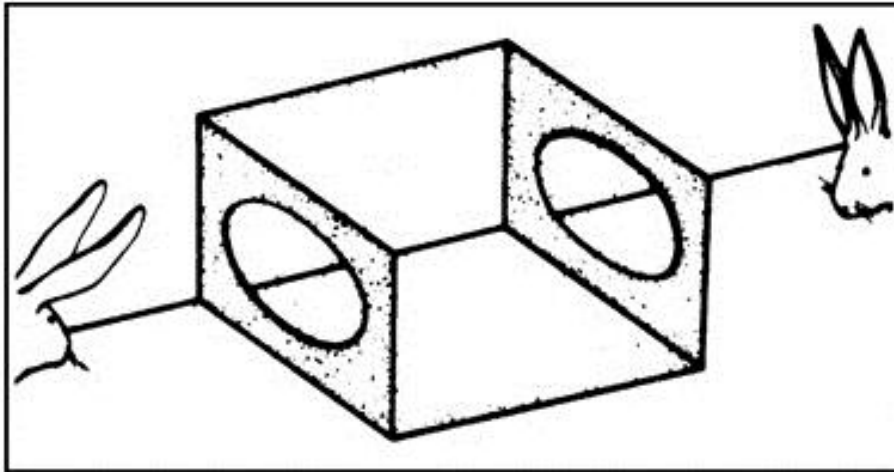
Eyes and mouth play a dominant role in face recognition.



Courtesy of Christopher Tyler

Context Effects

Context can radically alter perception.



Is the “magician cabinet” on the floor or hanging from the ceiling?

Cultural Context

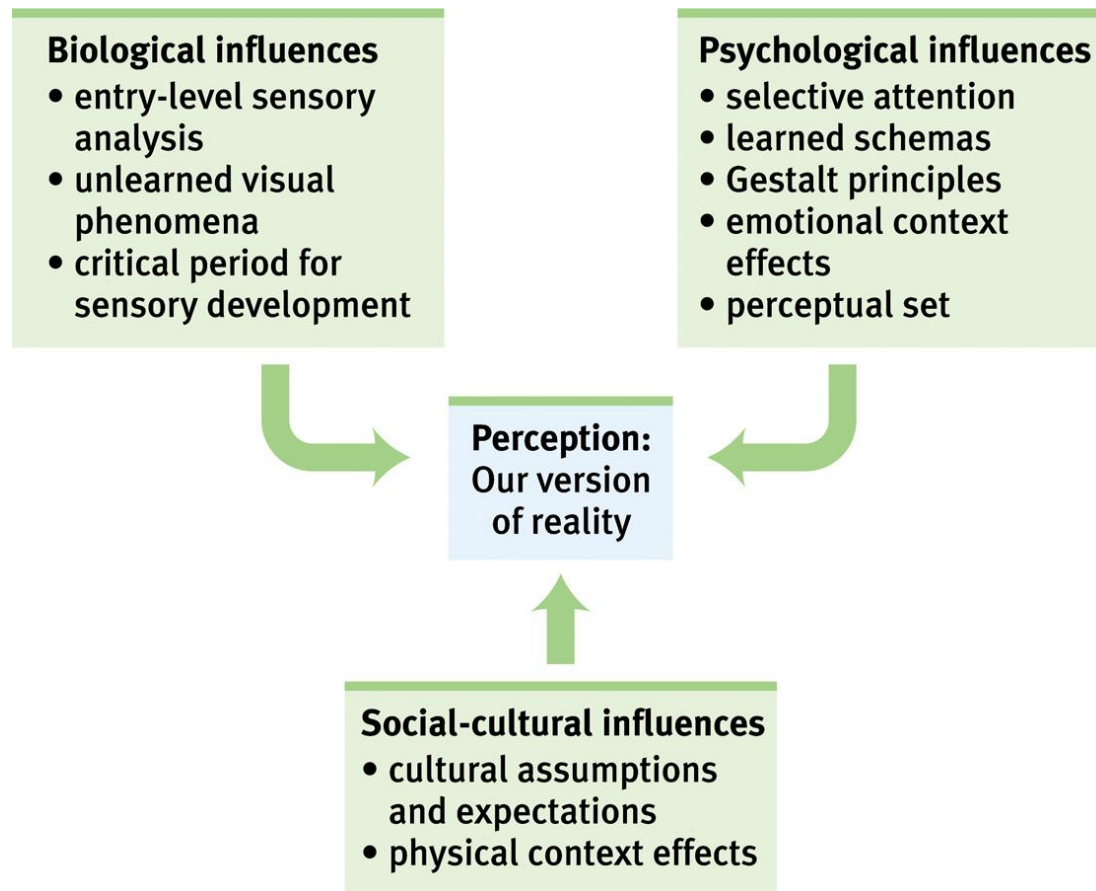
Context instilled by culture also alters perception.



To an East African, the woman sitting is balancing a metal box on her head, while the family is sitting under a tree. 49

Perception Revisited

Is perception innate or acquired?



Perception & Human Factors

Human Factor Psychologists design machines that assist our natural perceptions.



Photodisc/ Punchstock

(a)



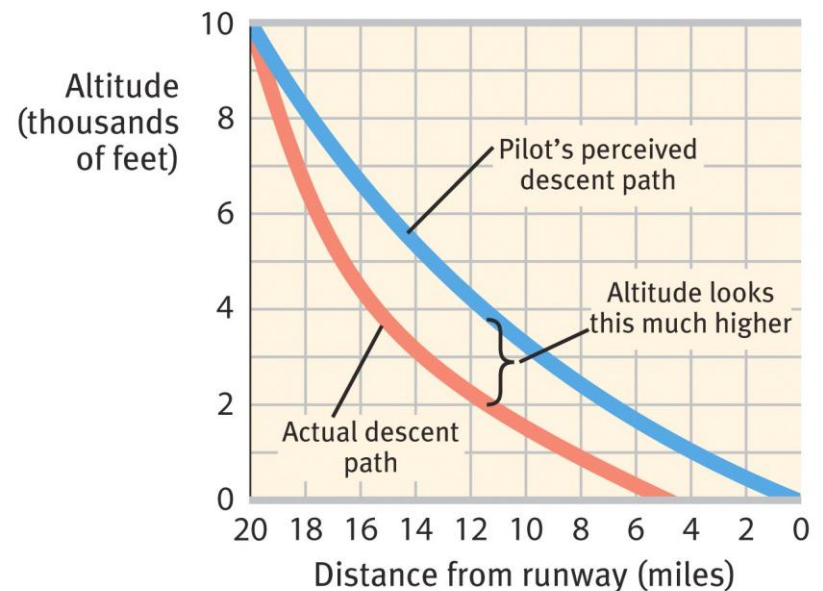
Courtesy of General Electric

(b)

The knobs for the stove burners on the right are easier to understand than those on the left.

Human Factors & Misperceptions

Understanding human factors enables us to design equipment to prevent disasters.



Two-thirds of airline crashes caused by human error are largely due to errors of perception.

Human Factors in Space

To combat conditions of monotony, stress, and weightlessness when traveling to Mars, NASA engages Human Factor Psychologists.



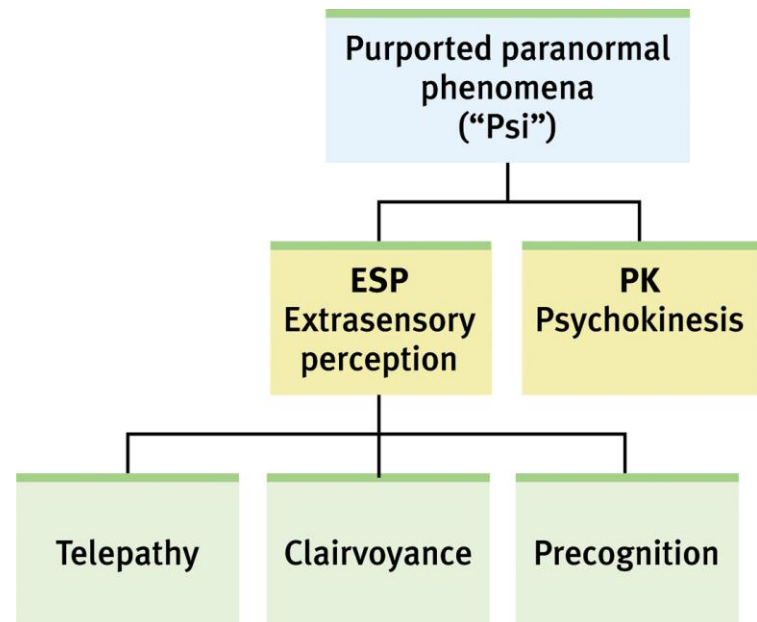
Transit Habitation (Transhab), NASA

Is There Extrasensory Perception?

Perception without sensory input is called extrasensory perception (ESP). A large percentage of scientists do not believe in ESP.

Claims of ESP

Paranormal phenomena include astrological predictions, psychic healing, communication with the dead, and out-of-body experiences, but most relevant are telepathy, clairvoyance, and precognition.



Claims of ESP

1. **Telepathy:** Mind-to-mind communication. One person sending thoughts and the other receiving them.
2. **Clairvoyance:** Perception of remote events, such as sensing a friend's house on fire.
3. **Precognition:** Perceiving future events, such as a political leader's death.

Premonitions or Pretensions?

Can psychics see the future? Can psychics aid police in identifying locations of dead bodies? What about psychic predictions of the famous Nostradamus?

The answers to these questions are NO! Nostradamus' predictions are “retrofitted” to events that took place after his predictions.

Putting ESP to Experimental Test

In an experiment with 28,000 individuals, Wiseman attempted to prove whether or not one can psychically influence or predict a coin toss. People were able to correctly influence or predict a coin toss 49.8% of the time.

